

# Trade Policies for Electronic Commerce

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Members of the World Trade Organization have decided provisionally to exempt electronic delivery of products from customs duties. There is growing support for the decision to be made permanent. Is this desirable?



## Summary findings

Some countries in the World Trade Organization initially opposed WTO's decision to exempt electronic delivery of products from customs duties, out of concern for the revenue consequences. Others supported the decision as a means of securing open trading conditions.

Mattoo and Schuknecht argue that neither the inhibitions nor the enthusiasm are fully justified.

First, even if all delivery of digitizable media products moved online—an unlikely prospect—the revenue loss for most countries would be small.

More important, however, the prohibition of customs duties does not ensure continued open access for electronically delivered products and may even prompt recourse to inferior instruments of protection. Barrier-free electronic commerce would be more effectively secured by deepening and widening the limited cross-border trade commitments under the General Agreement on Trade in Services (GATS) and by clarifying and strengthening certain GATS disciplines.

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# **Trade Policies for Electronic Commerce**

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## NON-TECHNICAL SUMMARY

This paper focuses on the WTO Members' decision not to impose customs duties on electronically delivered products. Since most electronic commerce is already free of barriers, the objective must be to preclude the introduction of new barriers. Such barriers may never be technically feasible, in which case any policy initiative - including the WTO decision - is unnecessary. But even if technological developments made it possible to impose restrictions, the significance of the decision seems to have been exaggerated – both by its opponents, who fear its revenue consequences, and its proponents, who see it as a means of securing free trade.

Two aspects of the WTO decision are notable. First, only electronic transmissions are covered; goods ordered through electronic means but imported through normal channels are explicitly excluded. The exemption of one mode of delivery from customs duties while others continue to be taxed is analogous to a preferential trading arrangement. And, as in the case of such arrangements, there is a positive trade-creating aspect and a negative trade-diverting aspect. The welfare cost of trade diversion for the importing country could at most be equal to the foregone tariff revenue – which has in fact been the main concern of developing countries. But while it is difficult to predict the revenue which could be raised through duties on products that are not today subject to such duties, our estimates suggest that the revenue consequences of diversion of physical trade into electronic channels are likely to be small.

The second significant aspect of the WTO decision is that it covers only customs duties; there is no mention of other forms of restrictions. This would not have mattered if all electronically delivered products could be treated “as if” they were goods, for which the GATT regime virtually prohibits other trade-restrictive measures. However, the bulk of electronically-delivered products, actual and potential, are services, for which the trade regime is that established by the GATS. This Agreement allows countries to decide whether to commit to market access, i.e. not to impose quotas, and to national treatment, i.e. not to discriminate in any way against foreign services and suppliers. Our review shows that many countries, developed and developing, have not made such commitments in a large number of services sectors where electronic delivery is feasible. In these sectors, the decision to grant duty-free treatment may either be ineffectual, because countries can still resort to discriminatory internal-taxation, or worse, it may force countries to resort to the inferior instrument of quotas. Barrier-free electronic commerce would be more effectively secured by deepening and widening the limited cross-border trade commitments under the GATS, and by clarifying and strengthening certain GATS disciplines.

## I. INTRODUCTION

Electronic commerce is burgeoning as a means of doing business and shows every sign of continuing to expand at a rapid rate. The rise of this new medium is attracting increasing attention in policy circles. This paper seeks to clarify a narrow set of policy issues relating to the international trade aspects of the medium. It focuses, in particular, on the WTO Members' decision not to impose customs duties on electronically delivered products. For the moment this commitment is temporary and political, but there are proposals to make it durable and legally binding.<sup>1</sup> Since most electronic commerce is already free of barriers (except of course those created by differences in standards), the objective must be to preclude the introduction of new barriers. Such barriers may never be technically feasible, in which case any policy initiative - including the WTO decision - is unnecessary. But if technological developments made it possible to impose restrictions, what would be the value of the decision on duty-free electronic commerce?

Two aspects of the WTO decision are notable. First, only electronic transmissions are covered; goods ordered through electronic means but imported through normal channels are explicitly excluded.<sup>2</sup> While all types of products can be advertised and purchased over electronic networks, the potential for electronic delivery is more limited. It requires that a final product be presented as digitalized information that can be transmitted electronically, typically over the Internet. Many services can be supplied in this form. Some information and entertainment products, such as books, software, music and videos, embody digitalized information that can also be supplied electronically over the Internet.

The exemption of one mode of delivery from customs duties while others continue to be taxed is analogous to a preferential trading arrangement. And, as in the case of such arrangements, there is a positive trade-creating aspect and a negative trade-diverting aspect. The latter arises when the tax-exempt mode is less efficient than the taxed alternative but is chosen simply to avoid the tax. While electronic delivery is frequently the most efficient means of delivery, it is conceivable that in some cases it is not. For instance, given the current state of technology, it may be more costly (in terms of time and money) to download films and music from the internet than to acquire them in physical form. The welfare cost of

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<sup>1</sup> Among the submissions for the Seattle Ministerial expressing support for continued duty-free treatment of electronic commerce were those from Australia, the European Union and the United States.

<sup>2</sup> There is no single definition of electronic commerce. The widest definition would include transactions where any one or more of the following three stages are carried out by electronic means: the pre-purchase stage, including advertising and information-seeking; the purchase-stage, including ordering and payment; and the delivery stage. The WTO decision concerns only electronically delivered products.

trade diversion for the importing country could at most be equal to the foregone tariff revenue – which has in fact been the main concern of developing countries. But while it is difficult to predict the revenue which could be raised through duties on products that are not today subject to such duties, our estimates suggest that the revenue consequences of diversion of physical trade into electronic channels are likely to be small.

The second significant aspect of the WTO decision is that it covers only customs duties; there is no mention of other forms of restrictions. This would not have mattered if it were agreed to treat all electronically delivered products “as if” they were goods, for which the GATT regime virtually prohibits other trade-restrictive measures. However, the bulk of electronically-delivered products, actual and potential, are unambiguously services, for which the trade regime is that established by the GATS. This Agreement allows countries to decide whether to commit to market access, i.e. not to impose quotas, and to national treatment, i.e. not to discriminate in any way against foreign services and suppliers. Our review shows that many countries, developed and developing, have not made such commitments in a large number of services sectors where electronic delivery is feasible. In these sectors, the decision to grant duty-free treatment may either be ineffectual, because countries can still resort to discriminatory internal-taxation, or worse, it may force countries to resort to the inferior instrument of quotas.<sup>3</sup>

The paper is divided into four sections. The next section (Section II) discusses the quantitative significance of the different categories of electronically delivered products. Section III examines the economic implications of duty-free electronic commerce, particularly those arising from discriminating between products on the basis of the means of delivery. Section IV examines the value of the WTO decision, given the current structure of rules governing trade in goods and services. Section V examines the need to clarify and strengthen certain GATS rules and Section VI concludes.

## **II. THE SCOPE OF THE DECISION ON DUTY-FREE ELECTRONIC COMMERCE**

International delivery through electronic delivery is feasible for two types of products. First, a number of products that have traditionally been delivered as goods can now be sent across networks in digital form. These products are basically all media products, and include film, various types of printed material, video

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<sup>3</sup> Our conclusions differ from the unqualified support for the decision expressed in other writings on the subject. See, for instance, Mann and Knight (2000).

games and various recorded information on carrier media such as tapes or CDs. Second, international cross-border trade in a wide range of services, financial, legal, telecommunications, customized software, etc. is carried out by electronic means. The data presented in this section demonstrate that trade in media products is dwarfed by trade in electronically delivered services.

## **II.1 Trade in digitizable media products**

Table 1 provides a product breakdown for trade in digitizable media products in 1990 and 1996. World trade amounted to about US\$44 billion in 1996, or less than 1 per cent of total world trade. Printed matter and recorded tapes, CDs etc. accounted for 60 per cent of the total. While the overall numbers are relatively small, trade in several products has increased rapidly in recent years. Average annual trade growth for digitizable media products was about 10 per cent between 1990 and 1996, 1.5 times as fast as total world merchandise trade. Trade growth in recorded media such as CDs was still higher. The EU (including intra-EU trade) accounts for 45 per cent of world trade or about US\$20 billion. For most countries, trade in digitizable media products was less than 2 per cent of total trade.

From these figures, we can conclude that trade in digitizable media products is currently not very important. But this may change to some extent in the near future. Trade over networks reduces transportation and administration costs considerably, and many products including films may soon be downloadable over the Internet. Currently, retailing costs account for a large share of the price of such products when sold in a shop. Mail order (by Internet or catalogue) is also expensive – the transportation and administration costs of sending such products across borders are often higher than the value of the product. However, when a product can be transferred over the Internet, prices may decline significantly, and electronic trade of such products is likely to increase rapidly. This implies that above average growth rates in these areas are likely to continue in the future. If trade continues to grow at 10 per cent, it will reach US\$ 100 billion by the year 2004.

## **II.2 Electronic services trade**

Electronic delivery already plays an important trade role in many services sectors. Communication services, computer and information services, a number of financial services, as well as other business services are frequently conducted over telecommunication networks. Table 2 provides an overview of cross-border services trade that already largely takes place in electronic form. Cross-border trade in these



sectors amounted to about US\$ 370 billion in 1995. This is equivalent to 30 per cent of world services trade, or 6 per cent of total world trade, and is clearly much more important than trade in the digitizable media products discussed above.

The most important services sector for cross-border trade is "other business services" with world-wide trade worth over US\$ 260 billion. This includes many services from accounting to engineering services, and it is unfortunate that a more detailed break-down is not available. However, services trade in communications, finance, etc. is also important, at US\$ 100 billion. The most important traders are France, Germany, Italy, Japan, the U.K. and the United States amongst industrial countries. However, China, Korea, Singapore and a number of other developing and transition economies, however, also report significant figures for this type of services trade.

We can expect rapid growth also in cross-border services trade as telecommunications costs continue to decline and Internet-based trade becomes more prominent. Electronic commerce over the Internet is much more versatile than the other electronic media, as it allows interactive communication with voice, data and image transmissions and much more. Internet data transmission is also much more efficient than via conventional telephone lines, which is likely to reduce transmission costs. This will boost trade in services already conducted over telecommunication networks and it will also facilitate trade in new services and in services that were only traded in physical form before (such as customised software on disks). Stock trading, automatic downloading of databanks, university courses, and medical diagnosis of x-rays are just examples of what is already done or will soon probably be done on the Internet.

### **III. ECONOMIC IMPLICATIONS OF DUTY-FREE ELECTRONIC COMMERCE**

The WTO decision not to impose tariffs on electronic commerce creates an important policy distinction: products that are otherwise identical are treated differently on the basis of the way they are delivered. Thus, music or software imported in electronic form is exempted from duties but subject to duties when imported in physical form.<sup>4</sup> We consider the economic implications of this distinction, first by drawing an analytical analogy - with preferential trading arrangements - and then empirically.

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<sup>4</sup> A group of countries have agreed to impose duties only on the carrier medium (e.g. disks in the case of software) and not on the content.

### III.1 Trade creation and trade diversion

We noted above that for a range of products, delivery by electronic means represents an increasingly viable alternative to more traditional channels. Assume that there is a certain price  $p_o$  of the product in the country of origin, independent of the mode of delivery. However, two other components of the price for the consumer can differ, i.e., delivery costs ( $d$ ) and policy-related costs ( $t$ ). The costs of electronic delivery include those associated with transmission and downloading of the product. The costs of delivery through alternative means depend on the nature of the product. In the case of products for which the alternative is delivery in physical form, e.g. software on a disk, delivery costs include those attributable to packaging, transportation, etc. In the case of services for which the alternative is delivery through the movement of suppliers (or consumers), delivery costs include those arising from travel. The policy costs also depend on the nature of the alternative means, and include tariffs in the case of physical delivery and the costs imposed by a variety of restrictions on the movement of suppliers (or consumers) in the case of services.

Assuming competitive supply with constant returns to scale, a consumer would face the following prices for the electronic and alternative means of delivery:

$$p_e = p_o + d_e + t_e$$

$$p_a = p_o + d_a + t_a$$

where  $p_e$  is the price to be paid for the electronically delivered product, and  $p_a$  is the price through alternative means. Since  $p_o$  is identical for both means of delivery, consumers will choose the electronic means of delivery if  $d_e + t_e < d_a + t_a$ .

Exempting only electronic delivery from duties implies that  $t_e=0$ , assuming that there are no other barriers. The consequences are analogous to those arising from the creation of a preferential trading arrangement, and depend on two things: whether electronic delivery is more or less efficient than alternative means of delivery,  $d_e < d_a$  or  $d_e > d_a$  and the nature of barriers on alternative means of delivery,  $t_a$ .

If electronic delivery is the most efficient means of delivery, i.e.  $d_e < d_a$ , then preferential treatment for this mode can only be trade creating and hence beneficial. But if it is not, i.e.  $d_e > d_a$ , then the shift in trade

towards the inefficient means of delivery may lead to a trade-diversion cost. But is electronic delivery ever less efficient than alternative means of delivery? In many cases, no. If a buyer of software over the Internet, for example, has a flat-rate Internet subscription and if one sees the computer as a fixed investment, marginal costs of downloading the software are close to zero. Physical delivery by mail across borders, on the other hand, implies costs for shipping and insurance which can sometimes exceed the value of the product.<sup>5</sup> However, even though transaction costs, and especially transportation costs, have declined strongly for electronically delivered products in recent years, for some products such as films and books they are still high. Furthermore, for certain services, quality is highly sensitive to proximity between the consumer and supplier, and so the quality-adjusted costs of electronic delivery may be quite high relative to those arising from the movement of suppliers. For instance, while the rudiments of legal advice could probably be communicated at quite low cost electronically, matching the quality of legal advice provided by face-to-face contact could involve quite high communications costs (e.g. through video-conferencing).

The costs of trade diversion for the importing country depend on the nature of the policy restriction on the alternative mode of delivery,  $t_a$ . If the restriction is a customs duty, as is often the case of trade in media products, the cost of trade-diversion is equal to the foregone tariff revenue. This cost could offset the gain in consumers surplus resulting from lower prices. However, if the policy restriction on the alternative mode is a purely frictional barrier that does not yield any revenue - e.g. delays in customs for physical goods - then there is no fiscal cost of trade diversion in terms of lost tariff revenue. This is particularly true in the case of services trade: even though electronic delivery in some cases may be less efficient than on-site provision by individual service suppliers, there is no fiscal trade-diversion cost for the importing country because the impediments to the movement of individuals are typically bureaucratic hurdles that do not generate revenue.<sup>6</sup>

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<sup>5</sup> Bacchetta et al. (1997, p. 33) provide an example for the large differences in transaction costs between domestic and international physical transport.

<sup>6</sup> However, if there are quality differences across modes of delivery, then policy distinctions can be seen as creating a quality-related trade diversion cost – as consumers switch to inferior products which receive favourable treatment. For instance, consumers may settle for less-preferred electronic delivery of legal or software services only because the barriers to movement of individual lawyers or software engineers are higher than on the electronic delivery of their services.

### III.2 Fiscal implications of duty-free electronic commerce

We have seen that if international trade in digitizable products shifts from a physical to electronic form because of duty-free treatment for the latter (and not because the latter is a more efficient means of delivery), then the loss in tariff revenue is a measure of the fiscal costs of trade diversion. Ideally we should calculate the tariff revenue that could be raised from aggregate imports of products for which electronic means are less efficient than alternative means of delivery. But there are serious empirical difficulties in undertaking this exercise. First, it is not possible to measure the trade that has already switched to electronic means to avoid customs duties. Secondly, it is not easy to establish product-by-product whether electronic means are more or less efficient than the alternative means of delivery - a judgement that is in any case bound to change with technological developments. We choose therefore to determine the maximum fiscal costs of future trade diversion by calculating the total tariff revenue currently raised by countries from all digitizable products.

Since detailed and comprehensive tariff revenue data are not available, we need to estimate the tariff revenue countries collect from these products.<sup>7</sup> Table 3 provides an estimate of the weighted average tariff rates applied to digitizable products currently traded as goods, the import values for these products, and the estimated tariff revenue for various countries. The estimates take into account duty-free treatment of intra-EU, intra-NAFTA and Australia-New Zealand trade, and the reduced rates for intra-MERCOSUR trade. However, they are still likely to overestimate tariff revenue as they do not take into account other tariff reductions or exemptions.

Table 3 indicates that the average applied tariff is below 10 per cent in most countries. Of the countries included in the table, only Thailand, Morocco, Korea and India apply tariff rates above 20 per cent. Total estimated tariff revenue, therefore, adds up only to about US\$ 732 million for the world as a whole.<sup>8</sup> The EU and Korea are estimated to collect close to half of the total. No other country collects more than US\$ 100 million, and many below US\$ 10 million.

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<sup>7</sup> The estimates are reasonably reliable for the most important categories where trade and tariff data were available for the most important countries. A few data problems persist as volume data for some products facing specific tariffs were not available, sometimes the tariff rate was not provided, and applied tariff rates for some of the smaller countries were not available. For an independent attempt to measure the revenue implications of electronic commerce, see Teltshcher (2000).

<sup>8</sup> Not counting China, for which estimates did not seem reliable.

The last two columns of Table 3 put these figures into perspective by comparing them with total tariff and total fiscal revenue in these countries. On average, tariff revenue on digitizable products amounts to less than 1 per cent of total tariff revenue and 0.03 per cent of total fiscal revenue. Not a single country collects more than 1 per cent of its total revenue from this source.

We can conclude that even if all delivery of digitizable media products moved online – an unlikely prospect – the revenue loss would be small. India, for example, would lose 0.4 per cent of tariff revenue and 0.1 per cent of total revenue. For Chile, the respective figures would be 0.4 per cent and 0.04 per cent and for Morocco 1.3 per cent and 0.2 per cent. Even if the trade share of such products doubled in the next few years, the revenue loss from "duty-free cyberspace" would be a very small share of total government revenue. The fear of future loss in customs revenue does not seem to be a strong reason to oppose "duty-free cyberspace".

It is important to emphasise that the estimates presented above capture only one implication of the WTO decision: the loss in *actual* tariff revenue if trade were to shift from physical to electronic means of trading. The estimates do not capture the loss in *potential* tariff revenue, i.e. the revenue that could have been raised if (i) all electronically delivered media-products were subject to duties like their physical counterparts, and (ii) all electronically delivered services were subject to duties. The first is hard to estimate because we have little idea about the current value of such trade. The second we have little basis for estimating because no country, as far as we know, imposes duties on services trade. This does raise the broader question of whether it makes economic sense to exclude services from duties that are imposed on imports of physical products?<sup>9</sup> In general, if the government needed to raise tariff revenue, it would rarely be optimal and almost certainly create distortions to exclude an entire class of products. The only argument for doing so must be that the costs of collection for the excluded products are prohibitively high – or it is simply infeasible to do so – a condition that is probably fulfilled for electronically delivered products given the current state of technology.

#### IV. DUTY-FREE ELECTRONIC COMMERCE IN THE CONTEXT OF WTO RULES

The characterisation of electronic commerce in terms of the WTO's institutional structure is important because multilateral rules are not uniform across all classes of economic transactions. First of all, there

can be little doubt that electronically delivered services, which account for the bulk of electronically delivered products, fall within the scope of the General Agreement on Trade in Services (GATS). This is straightforward because the Agreement covers all services irrespective of the means of delivery.

There may, however, be some doubt about how electronically-delivered *media* products should be classified. Some argue that their intangible state implies that they are best treated as services subject to GATS rules. Others argue that since their physical counterparts are covered by the rules of the General Agreement on Tariffs and Trade (GATT 1994)<sup>10</sup>, they too should be covered by the same rules. An example cited in support of the latter argument is that of a book, a product which is clearly identified in the customs classification systems for goods. The argument would be that since a book in physical form is a good, it makes sense to treat the electronic transmission of a book's contents as trade in goods, just as if the book had entered through normal customs channels at the frontier.<sup>11</sup>

We do not seek to provide an answer to how electronically-delivered *media* products should be classified. WTO members are even now deliberating on this issue. Rather our purpose is to demonstrate the implications of alternative classification choices. The next section will show that treating media products "as if" they were goods would imply a more liberal regime for cross-border trade in such products than if they were treated as services. But in the case of electronically-delivered services, there is no choice, the GATS applies.

#### **IV.1 Implications of the differences in current WTO rules for goods and services trade**

There are many differences between the legal frameworks of the GATT, covering trade in goods, and the GATS, covering trade in services, but three in particular have a crucial bearing on the regime for electronic commerce (see the table below). The first difference is with respect to the national treatment rule, which obliges countries to treat foreign products no less favourably than domestic products. In the GATT, national treatment is a general obligation, but it applies only to internal measures, such as internal

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<sup>9</sup> See Panagariya (1999).

<sup>10</sup> The original GATT 1947 as modified by the Marrakesh Agreement.

<sup>11</sup> Guidance could also be received from the statistical convention for balance-of-payments purposes, which distinguishes between standardised and non-standardised products. A book or a mass consumption "over-the-counter" software package, for example, are standardized products and considered to be goods. But customised data on a CD, or customized software, would be treated as non-standardized products and classified as services. But this distinction may not be easy to make in practice. See Bacchetta, et al. (1997).

taxes and regulations, and not to border measures, such as customs duties. In the GATS, national treatment applies to all measures affecting the supply a service, but it is not a general obligation; it only applies to sectors that a member has explicitly scheduled and there too may be subject to limitations.

A comparison of the key WTO rules for measures affecting goods and services trade			
	National Treatment	Customs Duties	Quotas
<i>GATT rules for goods trade</i>	General obligation, permitting no exceptions, but applies only to internal measures.	Allowed where Members have not bound their tariffs at zero.	Not allowed except in certain emergencies.
<i>GATS rules for services trade</i>	Not a general obligation, applies only to sectors that a member has explicitly scheduled and there too may be subject to limitations. But applies to all measures affecting the supply a service.	Not allowed if a Member has committed to providing national treatment without limitations.	Allowed, unless a Member has committed to providing market access without limitations.

The second difference is a consequence of the first: the GATT envisages the use of customs duties on imports where Members have not bound their tariffs at zero, whereas the GATS has little to say about customs duties, or taxes in general, except that a Member's tax regime must be consistent with its national treatment commitments. Finally, the GATT contains a general prohibition on quantitative restrictions (except in certain emergencies). In the GATS, quantitative restrictions are prohibited only in sectors where a country has made a commitment to provide market access without limitations.

As a consequence of these differences, the treatment of a product can differ significantly depending on whether its is classified as a good or a service. Imports of a good cannot be subject to quantitative restrictions or to any discrimination through internal taxation and domestic regulations. They could, however, be subject to tariffs up to the level bound by a Member in its schedule. Therefore, if certain electronically-delivered media products were to be classified as goods, then the decision on duty-free treatment would ensure free trade.

However, the services trade regime depends largely on the specific commitments made by a Member. In this context, a commitment not to impose customs duties has limited legal value. Consider two alternative possibilities.

If a Member has made a commitment to provide national treatment in a particular sector, then all discriminatory taxes (including customs duties by definition) are already prohibited and so the new commitment adds nothing. If a Member has not made a commitment to provide national treatment, then it remains free to impose discriminatory internal taxes other than customs duties, so again the new commitment has limited value.

But there is a less obvious and more serious problem with the proposal. Banning only customs duties could increase reliance on quotas which are allowed under the GATS (unless a Member has committed not to use them). It may, of course, never be technically feasible to impose either customs duties or quotas on services trade, in which case the proposed standstill is irrelevant. But if it were to be technically feasible to impose such measures, then there is no good reason why customs duties should be banned while quotas are allowed. Why would we want to prohibit the use of an economically superior instrument of protection while allowing the use of an inferior instrument?<sup>12</sup>

In sum, the strength of the proposal for duty-free treatment is that for the limited class of electronically-delivered media products, it may ensure that trade in future, as at present, is free of restrictions – provided it is agreed that such products should be treated *as if* they are goods. The weakness of the proposal is that it does not take into account the trade regime for services, which constitute the bulk of electronically transmitted products.

#### **IV.2 Current commitments under the GATS**

It would seem obvious that the appropriate route to secure barrier-free electronic commerce is to negotiate fully liberal commitments under GATS on market access (which would preclude quantitative restrictions) and on national treatment (which would preclude all forms of discriminatory taxation). This raises the question: how far are we from this goal?

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<sup>12</sup> In fact, given past patterns of liberalization, precisely the opposite move should be encouraged where feasible, i.e. a conversion of quotas to tariffs which would be gradually reduced – though the agricultural experience also demonstrates the danger of over-tariffication.



Our main interest is in services that can actually be delivered electronically for example, business, entertainment and financial services.<sup>13</sup> When analysing the commitments relevant to electronic commerce, we focus on cross-border supply (mode 1), though it must be borne in mind that consumption abroad (mode 2), may also be relevant and that the distinction between modes is not always clear (as discussed in the next section). In examining the level of commitments for the different sectors and modes of supply, three degrees of liberalization commitments can be distinguished. First, there are “full” commitments assuring unrestricted access. These are reflected in a “none” entry against a particular mode of supply in the schedule; second, there are “partial” commitments which refer to the entries that are conditioned in some way by a limitation; and third, there are “no” commitments which are expressed by an “unbound” entry against the relevant mode, and offer no guarantee of market access.

Commitments on mode 1 for the relevant service sectors are surveyed in Table 4. The first column in Table 4 indicates the relevant sector, while the second column shows the number of countries which have made commitments on at least one sub-sector of the sector. The third, fourth, and fifth columns indicate the level of market access commitments made on cross-border supply in the sector. The last three columns provide the same information for national treatment commitments.

Several broad features emerges. In only 5 of the sectors considered here were commitments made by more than half of the WTO Membership of 130 (at that time). These sectors are professional services, other business services (which include advertising), insurance services, banking and other financial services, and travel agencies and tour operators. In professional services, however, even though there are commitments from 74 Members, less than a fifth assure unrestricted market access and national treatment, respectively. In software implementation and data processing, of the total WTO Membership of over 130, only 56 and 54 Members, respectively, have made commitments; and only around half of these commitments guarantee unrestricted market access, and a similar proportion unqualified national treatment.

The table may present a somewhat pessimistic picture of the true economic significance of commitments for two reasons. First, the table counts each country as one and does not take the relative economic

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<sup>13</sup> It is difficult to define precisely the services that can be delivered electronically, which in any case is expanding constantly with new technological developments. The services that cannot be delivered electronically are easier to define. They include most construction services, environmental services (like sewage and waste disposal), hospital services, hotel and restaurant services, and transport services. Even in the case of these services, certain

importance of countries into account. Secondly, the table counts each sub-sector as one, and does not take into account differences in their economic importance. However, despite these qualifications, our findings do suggest that there remains significant scope for widening and deepening the scope of these commitments.

## V. THE NEED TO CLARIFY AND STRENGTHEN GATS RULES

While increasing GATS commitments is necessary to secure openness for electronic commerce, it is not sufficient. There is also a need to clarify and strengthen certain provisions of the Agreement. There is a danger that the notion of duty-free electronic commerce may not only divert negotiating energy from these issues, but actually impede the pursuit of clarity.

### V.1 Technological neutrality

Confirming the principle of technological neutrality in the GATS is perhaps the single most important step needed to ensure that the rules of the Agreement apply to electronic commerce.<sup>14</sup> Technological neutrality implies that Members agree not to make policy distinctions between products on the basis of the means of delivery. Consider in turn why this principle is important, and why it cannot be taken for granted.

If the principle of technological neutrality is not accepted, the application of key GATS rules - market access, national treatment and most-favoured nation treatment - to electronic delivery is put into question. First, note that the market access provision of the GATS prohibits certain quantitative restrictions in scheduled sectors (unless they are explicitly specified).<sup>15</sup> A prohibition on the *electronic* delivery of a service does not amount to a quota on the total value or volume of a service, provided there are other means of delivering the service across borders. Such a restriction is therefore not precluded by

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support services, such as construction designs, telemedicine and hotel reservations, can increasingly be provided electronically.

<sup>14</sup> There are indications that WTO Members are close to confirming this principle. In the Interim Report to the General Council by the Council for Trade in Services on the Work Programme on Electronic Commerce (WTO Document S/C/8, dated 31 March 1999), among the "issues on which a common understanding appeared to be emerging."

<sup>15</sup> Permitted restrictions include limitations of the number of service suppliers, the value of transactions or assets, the number of operations or total quantity of output, the number of natural persons that may be employed, the nature of legal entities permitted to supply services, and the extent of participation of foreign equity in an enterprise.

commitments to provide market access - unless it is agreed that a commitment to allow market access implies that the supplier is free to choose any technical means of delivery.

In the application of the MFN and national treatment rules, the concept of like product is crucial.<sup>16</sup> Suppose, for example, a Member allowed legal services to be supplied cross-border through mail delivery, but not through electronic delivery. If identical products delivered by different means of conveyance were not deemed like products in a legal sense, then such a regime would be deemed non-discriminatory. Hence, for the MFN and national treatment provisions to operate in defence of electronic commerce, it is necessary that products be deemed alike regardless of the means by which they are transported.<sup>17</sup>

But is there really need for an explicit agreement on technological neutrality, can it not simply be presumed? The answer is negative for three reasons. First, the classification of a service under GATS, i.e. the definitions in the underlying United Nations Central Product Classification, are sometimes not technology-neutral. That is, the definition may describe exhaustively the means of delivery without mentioning electronic means.<sup>18</sup> Secondly, in the negotiations on basic telecommunications, an explicit understanding was reached on the principle of neutrality to overcome these definitional doubts and to clarify the coverage of scheduled commitments. The understanding established a presumption that unless indicated to the contrary, the description of a basic telecommunication service in a Member's schedule of specific commitments encompassed the full spectrum of ways in which the service in question might be supplied. A commitment on voice telephony, for example, would cover radio-based as well as wire-based technologies unless otherwise indicated. The fact that there was a need for such an understanding in one sector suggests that it may be necessary for WTO Members to affirm the principle more generally.

Finally, and somewhat ironically, the decision on duty-free electronic commerce itself serves to undermine the notion of technological neutrality. The requirement to treat electronic delivery of software service differently from delivery of software services through other means (e.g. by mail on a diskette)

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<sup>16</sup> Some of these issues have been discussed also in Hart and Chaitoo (2000).

<sup>17</sup> In the sphere of goods, a comparable case would be one in which garments transported by road would be subject to one regime and those transported by air would be subject to another. In order to justify this differentiated regime against a charge of MFN-inconsistency, garments entering by road and identical garments entering by air would have to be deemed unlike products. While most would regard such distinctions as bizarre in the case of goods, they are perhaps less obviously so in the case of services.

<sup>18</sup> Alternatively, it may be silent or less than fully explicit on this question, leading to competing interpretations of the intention behind a specific commitment in a Member's schedule.

does put into question the principle that “likeness” of products is not conditional on identical means of delivery.

## **V.2 Classification of electronically delivered products**

Even though all services fall within the scope of the GATS, two classification issues still need to be addressed. The first we have already encountered, and relates to the basic question of how a service is to be defined. In particular, should trade in all intangibles (including electronically-delivered media products) be classified as services?<sup>19</sup> If it were agreed to do so, there would be a need to enhance the existing classification<sup>20</sup> so that Members could make explicit liberalizing commitments for products such as books and music delivered through the Internet. One simple approach could be to have a single category for all electronically delivered media products, but other more differentiated approaches are possible.

The second classification issue concerns services that did not exist when commitments were made but have emerged with the development of the internet. An example is "home-ticketing" (i.e. booking and tele-printing of a transport or entertainment tickets). Given that the GATS approach to product definition is based on a positive listing, it is questionable whether the “other” category that exists within most clusters of services activities could legitimately be considered to encompass new services. Again there is a need to create scope in the classification for countries to make liberalizing commitments with respect to these activities.

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<sup>19</sup> If an affirmative answer seems obvious, note that electricity is treated as a good in the WTO. Nevertheless, treating electronically transmitted media products as goods would raise practical difficulties because these transmissions would be difficult to distinguish from similar transmissions that are services. For example, the electronic delivery of a music album would be hard to distinguish from the transmission of songs, an audiovisual service. This suggests that the feasibility of making distinctions between product categories should also play a role in deciding on the appropriate classification scheme.

<sup>20</sup> No compulsory or universally agreed classification system exists for services under GATS. In many instances, Members have chosen to follow the nomenclature developed for GATS purposes (GNS/W/120), which in many sectors is based on the provisional Central Products Classification (CPC) of the United Nations. The CPC nomenclature was not, however, used as the classification basis in a number of sectors, including financial services, telecommunications, air transport and maritime transport. Nevertheless, the mention of a CPC heading in the first column of a GATS schedule can clarify the product description, and hence the precise scope of a commitment. While the intention behind the CPC is to provide an exhaustive classification system, in practice resort is often made to the description “other services”. The current version of the CPC was issued in 1989. It could not anticipate subsequent technological developments, and it is currently being revised.

### V.3 Distinguishing between the modes of supply

There is also a need to clarify whether services that are delivered electronically across the border fall within the scope of mode 1 of the GATS, i.e. cross-border supply, or mode 2, i.e. consumption abroad.<sup>21</sup> Let us first consider in turn why the distinction is not already clear and then examine why it matters.

In the agreed scheduling guidelines,<sup>22</sup> the modes of supply are essentially defined on the basis of the origin of the service supplier and consumer, and the degree and type of territorial presence which they have at the moment the service is delivered. In both modes 1 and 2, the supplier is not present within the territory of the Member. The distinction between modes 1 and 2, therefore, hinges upon whether the service is delivered within the territory of the Member from the territory of another Member or whether the service is delivered outside the territory of the Member. Since the physical presence of the consumer is not a criterion for determining the place of delivery of a service, it sometimes becomes difficult to determine in an unambiguous manner where the service is delivered. Hence, the distinction between the two modes is not always clear. One simple solution would be to require a physical movement of the consumer to the territory of another Member for a transaction to be classified under mode 2, but other solutions, such as collapsing the two modes together are also possible.

The distinction between the first two modes matters for at least two reasons. First, the levels of commitment made by WTO Members on the two modes often differ, and are frequently more liberal with respect to mode 2.<sup>23</sup> Therefore, the classification of some electronic deliveries under the first mode would imply a less open trade regime is assured than if they were classified under the second mode. Secondly, the modal distinction may correspond to a jurisdictional distinction and therefore affect the choice of regulatory regime under which a transaction is deemed to take place. Classification as mode 1 could be taken to imply that regulations of the consumer's country apply since the transaction is presumed to take place in its territory; classification as mode 2 could imply that regulations in the territory of the supplier apply. In general, the latter choice has a more liberalising impact than the former.

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<sup>21</sup> The modal classification problem and possible approaches to dealing with it are considered also in Tinawi and Berkey (2000).

<sup>22</sup> See WTO document MTN.GNS/W/164 of 3 September 1993.

<sup>23</sup> It is also relevant that GATS rules require a country to allow cross-border capital flows if they are an essential part of the delivery of a service through mode 1, but do not impose a similar requirement with respect to mode 2 – a distinction that is particularly important in financial services.

#### **V.4 Strengthening disciplines on domestic regulations**

Among the current impediments to electronic commerce, those posed by domestic regulations are today much more important than those created by explicit barriers like tariffs and quotas. It is, however, difficult to address regulatory barriers to trade without infringing on the freedom of governments to pursue legitimate public policy objectives. Neither the GATT nor the GATS attempts to pronounce upon the legitimacy of regulatory objectives as such. Rather, the WTO's focus is upon how regulatory objectives are met, seeking to ensure that regulations do not serve as a surrogate means of discrimination or protection.

Two key provisions shape the GATS approach to regulation. First, Article XIV (crafted similarly to the GATT general exceptions provision, Article XX) permits Members to take measures, in specified circumstances, that would otherwise violate GATS obligations. The reasons for taking such measures include: the protection of public morals, and of human, animal or plant life or health; the maintenance of public order; ensuring compliance with laws and regulations, including those dealing with the prevention of deceptive and fraudulent practices, the non-fulfilment of contracts, the protection of privacy and confidentiality, and safety. Article XIV states that such measures must not be applied in a manner that constitutes "a means of arbitrary or unjustifiable discrimination between countries where like conditions prevail, or a disguised restriction on trade in services." In the context of electronic commerce, Article XIV would provide any necessary legal cover for measures required to protect privacy, prevent dissemination of socially undesirable material, and to deal with fraud.

Since the general exceptions provision covers most issues of concern, it should be possible to strengthen GATS rules dealing with the trade-restrictive impact of other domestic regulations. In the context of electronic commerce, market failure due to informational problems would seem to be the most important reason for regulatory intervention. Is a doctor in another country adequately well-trained, or is a financial institution in another country sound? While such motives for regulation are legitimate, the difficulty is in distinguishing between the necessary and protectionist. Article VI of the GATS defines a number of disciplines regarding the application of regulations. For instance, it requires that in areas where specific commitments have been made, all "measures of general application" affecting trade in services (for instance, licensing or qualification requirements for all service providers, domestic and foreign) must be administered in a reasonable, objective and impartial manner.

However, Article VI of the GATS does not as yet stipulate a clear test to determine whether a particular regulation is more burdensome than necessary to achieve the stated objective. Such a provision (notably in the Agreement on Technical Barriers to Trade) has proved important in the goods context to address regulations that are excessively trade restrictive. It is important that the progress be made in the work programme stipulated under Article VI to develop any necessary disciplines to ensure that “measures relating to qualification requirements and procedures, technical standards and licensing requirements do not constitute unnecessary barriers to trade in services.”

## **VI. Conclusion**

Electronic commerce is likely to grow strongly in the coming years, especially boosting trade in services and in digitizable media products. The decision on duty-free commerce is intended to contribute to this growth by providing a guarantee of open trading conditions, but the significance of the decision may have been exaggerated. Not only is the effectiveness of the decision doubtful, it has economic and legal implications that cannot be ignored. The economic implication is that preferential treatment of a particular mode of delivery could lead to trade-diversion from other modes. But we have argued that the future costs of such trade diversion (both in absolute terms and relative to total revenue) are unlikely to be large. The legal implication is that preferential treatment of electronic delivery puts into question the principle of technological neutrality, which prohibits distinctions between products solely on the basis of means of delivery. Affirming this principle is crucial to ensure that GATS rules and commitments apply to electronic commerce. And since it is these rules, together with enhanced commitments, that can ensure barrier-free electronic commerce, their clarification and strengthening is essential.

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**Table 1. World Trade in Selected Digitizable Media Products, 1990-1996<sup>24</sup>**

Commodities	YEARS					Average Annual Growth Rate 1990-1996
	1990 <sup>2526</sup>		1996			
	(in millions of US\$)	(in %)	(in millions of US\$)	(in %)		
(incl. SITC Code)						
883 Cinematograph film						
imports	308.1	1.1	353.9	0.8		2.3
exports	292.4	1.2	375.1	0.9		4.2
8921 Printed matter						
imports	7420.5	27.5	10621.2	24.1		6.2
exports	7137.8	29.9	11099.2	25.4		7.6
8922 Newspapers, journals, etc.						0.0
imports	3488.1	12.9	4661.8	10.6		5.0
exports	3286.0	13.8	4774.9	10.9		6.4
89286 Advertising material						
imports	3014.2	11.2	3253.5	7.4		1.3
exports	2789.2	11.7	3864.9	8.8		5.6
Other 892 Other printed matter						
imports	2862.2	10.6	5387.1	12.2		11.1
exports	2958.2	12.4	5138.0	11.7		9.6
89431 Video games						0.0
imports	2641.8	9.8	3752.7	8.5		6.0
exports	383.8	1.6	2983.8	6.8		40.7
8986 Recorded magnetic tapes						
imports	1695.8	6.3	1923.6	4.4		2.1
exports	1612.8	6.8	1718.6	3.9		1.1
8987 Recorded media n.e.s. <sup>27</sup>						0.0
(CD, discs) imports	5532.9	20.5	14136.0	32.1		16.9
exports	5412.8	22.7	13774.1	31.5		16.8
Total						
imports	26964	100.0	44090	100.0		8.5
exports	23873	100.0	43729	100.0		10.6

<sup>24</sup> Reexports and intra-EU trade included.<sup>25</sup> Chinese Taipei not included; accounted for 1% of imports and exports in 1996.<sup>26</sup> Discrepancy between imports and exports possibly due to categorization problems.<sup>27</sup> n.e.s. : not elsewhere specified.

Source: Perez-Estevé and Schuknecht (1999) based on COMTRADE, United Nations Statistical Division (UNSD).

**Table 2: Cross-Border Services Trade Predominantly in Electronic Form, Selected Sectors 1995**

<i>Countries</i>		<i>Communica- tion</i>	<i>Computer &amp; Information</i>	<i>Financial</i>	<i>Insurance</i>	<i>Other Business Services</i>	<i>Personal/ Cultural/ Recreational</i>
<b><i>Developed Countries</i></b>							
Australia	exports	557	128	298	378	...	151
	imports	727	121	208	...	...	398
France	exports	472	360	2546	7504	24219	666
	imports	406	518	2351	7021	17942	870
Germany	exports	2040	1380	2430	8670	20740	160
	imports	2950	1460	560	8830	26650	1970
Italy	exports	292	160	2620	1396	13154	368
	imports	627	455	4454	864	16225	1113
Japan	exports	500	...	310	300	24440	130
	imports	840	...	460	2510	31870	560
Netherlands	exports	618	619	355	...	13241	467
	imports	675	534	421	934	11643	514
Spain	exports	542	1029	609	935	4283	218
	imports	399	729	565	...	5689	767
United kingdom	exports	1530	1830	5260	3890	14010	3400
	imports	1920	1720	...	740	7060	1560
United States <sup>a</sup>	exports	3140	...	6100	1390	30550	2260
	imports	7280	...	1710	4470	17680	160

*(continues)*

(continued)

**Table 2: Cross-Border Services Trade Predominantly in Electronic Form, Selected Sectors 1995**

<i>Countries</i>		<i>Communica- tion</i>	<i>Computer &amp; Information</i>	<i>Financial</i>	<i>Insurance</i>	<i>Other Business Services</i>	<i>Personal/ Cultural/ Recreational</i>
<b><i>Developing and Transition Economies</i></b>							
Argentina							
	exports	333	...	131	...	...	...
	imports	...	...	185	...	...	...
Brazil							
	exports	...	43	827	186	...	46
	imports	...	251	950	...	...	256
China							
	exports	756	...	...	1852	3740	...
	imports	217	...	...	4273	6930	...
Czech Republic							
	exports	292	5	...	...	...	74
	imports	256	11	141	...	...	126
India							
	exports	...	...	...	...	...	...
	imports	...	...	...	559	...	...
Korea, Rep. Of							
	exports	...	5	105	538	7665	...
	imports	212	94	...	824	6835	98
Poland							
	exports	302	12	145	738	...	27
	imports	195	58	228	727	...	26
Turkey							
	exports	...	...	201	...	...	2282
	imports	...	...	350	...	...	1378
Singapore							
	exports	...	...	...	390	15644	...
	imports	...	...	...	972	5530	...
South Africa							
	exports	...	...	...	439	...	...
	imports	...	...	...	816	...	...
Other Countries							
	exports	4813	1494	7493	4526	89630	826
	imports	3122	1399	62690	12886	107176	1461
Total							
	exports	16702	7066	35057	34000	267982	11075
	imports	20507	7350	18873	45051	261230	11257
<b>Total of selected services trade sectors</b>							
	exports	371882					
	imports	364268					

... data not available

"Excludes cross-border affiliates trade."

Source: Balance of Payments Statistics, IMF.

**Table 3: Estimated Tariff Revenue on Selected Media Products, 1996**

Countries	Weighted average of applied tariffs	Imports	Estimated tariff revenue	Estimated tariff revenue of selected media products	
	(in %)	(in millions of US\$)		(in % of total import duties)	(in % of total revenue)
Australia <sup>ij</sup>	1.4	1113	15.3	0.7	0.02
Canada <sup>b</sup>	2.9	464	13.5	0.6	0.01
EU(15) <sup>g</sup>	3.1	5666	173.4	...	...
Japan <sup>ak</sup>	0.0	2176	0.0	0.0	0.00
New Zealand <sup>i</sup>	4.2	224	9.4	1.7	0.04
Norway <sup>a</sup>	0.0	576	0.2	0.1	0.00
USA <sup>ab</sup>	0.5	4129	21.5	0.1	0.00
Total for Developed Countries	1.6	14347	233.4	0.7	0.01
Argentina <sup>hj</sup>	18.5	241	44.6	2.9	0.13
Brazil <sup>*hk</sup>	8.3	340	28.1	1.9	0.16
Chile	10.6	136	14.5	0.4	0.04
Chinese Taipei <sup>c</sup>	3.6	495	17.9	...	...
Colombia <sup>al</sup>	8.3	156	12.9	1.4	0.11
Czech Republic <sup>a</sup>	2.8	278	7.7	1.0	0.04
Egypt <sup>af</sup>	8.6	24	2.1	0.1	0.01
Hong Kong, SAR <sup>a</sup>	0.0	870	0.0	0.0	0.0
India <sup>a</sup>	26.0	198	51.3	0.4	0.10
Indonesia	10.3	70	7.2	0.5	0.03
Korea	21.1	771	162.7	2.4	0.15
Malaysia <sup>a</sup>	6.5	252	16.4	0.7	0.07
Mexico <sup>bj</sup>	8.6	161	13.8	1.0	0.04
Morocco <sup>aem</sup>	29.2	55	16.1	1.3	0.23
Pakistan <sup>acj</sup>	13.0	18	2.3	0.1	0.02
Paraguay <sup>ahk</sup>	9.7	19	1.9	1.8	0.23
Peru <sup>ad</sup>	12.0	68	8.1	...	...
Philippines <sup>cf</sup>	14.9	140	20.9	0.5	0.13
Slovenia <sup>a</sup>	3.3	77	2.5	...	...
Thailand <sup>ac*</sup>	24.2	279	67.4	1.3	0.20
Total for Developing Countries	11.2	4649	498.5	0.8	0.10
<b>Total</b>	<b>4.3</b>	<b>18997</b>	<b>731.9</b>	<b>0.75</b>	<b>0.03</b>

... data not available

\* import data from 1995

<sup>a</sup> Tariff rates not available for paperboard labels of all kinds, whether or not printed (SITC 89281).

<sup>b</sup> Intra-NAFTA trade excluded considering that all products will be tariff free January 1, 2003, at the latest.

<sup>c</sup> Ad-valorem tariff estimations not available for specific duties applied to cinematograph film (SITC 883) and therefore excluded from the calculation.

<sup>d</sup> Tariff rates not available for the following SITC lines and are therefore not included: 883.

<sup>e</sup> Tariff rates not available for the following SITC lines and are therefore not included: 89431.

<sup>f</sup> Import data not available for the following SITC lines and are therefore not included: 89285.

<sup>g</sup> Intra-EU trade excluded.

<sup>h</sup> Intra-MERCOSUR trade excluded.

<sup>i</sup> Intra-Australian and New Zealand trade excluded.

<sup>j</sup> Total import duties and total revenue from 1995

<sup>k</sup> Total import duties and total revenue from 1993

<sup>l</sup> Total import duties and total revenue from 1994

<sup>m</sup> Total import duties and total revenue from 1992

Source: Perez-Estève and Schuknecht (1999) based on COMTRADE; UNSD; Market Access Applied Tariff Database; Government Finance Statistics Yearbook, IMF 1997; Table 3.; <http://www.apectariff.org/>

**Table 4: GATS Commitments on Cross-Border Supply for Selected Service Sectors (in %)**

Sector/Subsector	Number of Countries	Market Access			National Treatment		
		Full <sup>1</sup>	Part <sup>1</sup>	No <sup>1</sup>	Full <sup>1</sup>	Part <sup>1</sup>	No <sup>1</sup>
BUSINESS SERVICES							
A. Professional	74	19	17	64	14	10	76
B. Computer and related	62	40	22	37	25	9	66
C. Research and development	37	37	14	49	24	7	68
D. Real estate	18	50	36	14	30	18	53
E. Rental / leasing	39	28	14	56	20	9	70
F. Other business	71	16	14	71	13	8	80
COMMUNICATION SERVICES							
A. Postal	6	67	33	0	67	33	0
B. Courier	33	39	33	27	42	33	24
C. Telecommunication	57	11	25	63	12	14	75
D. Audiovisual	19	11	23	66	14	10	77
DISTRIBUTION SERVICES							
A. Commission agents <sup>1</sup>	21	10	70	20	10	75	15
B. Wholesale trade	34	27	55	18	30	55	15
C. Retailing	33	24	52	24	21	55	24
D. Franchising	22	64	36	0	59	36	5
E. Other	3	50	50	0	50	50	0
EDUCATIONAL SERVICES							
A. Primary education	21	45	25	30	40	40	20
B. Secondary education	23	45	41	14	41	50	9
C. Higher education	20	60	30	10	40	50	10
D. Adult education	20	50	45	5	40	55	5
E. Other education	12	33	67	0	42	58	0
FINANCIAL SERVICES							
A. All insurance and insurance-related	73	17	31	52	21	23	56
B. Banking and other financial	73	15	24	61	18	19	63
C. Other	8	13	38	50	13	38	50
TOURISM AND TRAVEL-RELATED SERVICES							
A. Travel agencies / tour operators	86	50	17	33	50	19	31
B. Tourist guides	52	55	8	38	51	13	36
C. Other	13	38	31	31	46	31	23
RECREATIONAL, CULTURAL AND SPORTING SERVICES							
A. Entertainment	28	63	11	26	67	11	22
B. News agency	14	71	21	7	57	43	0
C. Libraries, archives, museums and other cultural	13	54	23	23	54	31	15
D. Sporting and other recreational	34	54	23	23	54	31	15
E. Other	1	100	0	0	100	0	0
COMPUTER AND RELATED SERVICES							
A. Consultancy service related to the installation of computer hardware	51	57	20	24	51	22	27
B. Software implementation	56	54	27	20	48	29	23
C. Data processing	54	54	26	20	46	31	22

<sup>1</sup>Full: full commitment; Part: partial commitment; No: no commitment.

Note: Percentage may not add up to 100 due to rounding.

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